RE: New York City's DEIS for the Gowanus Canal area

Clarke, Kevin <kclarke@dep.nyc.gov>

Fri 10/8/2021 3:56 PM

To: Tsiamis, Christos <Tsiamis.Christos@epa.gov>
Cc: Hess, Juliana/NYC <Juliana.Hess@jacobs.com>; Carr, Brian <Carr.Brian@epa.gov>; Judd, Andrew/NJO <Andrew.Judd@jacobs.com>; Mulvihill, Daniel <DMulvihill@dep.nyc.gov>

1 attachments (432 KB)

20211008 Response to Additonal Comments from EPA.pdf;

Hi Christos:
As requested, attached please find the responses to each of your comments / questions. In the document your questions are noted in blue text and our responses are noted in black text.
Please let me know if you have any further comments or questions,
Thank you,
Kevin

KEVIN CLARKE, P.E. | PORTFOLIO MANAGER |
NYC ENVIRONMENTAL PROTECTION | (O) 718 595 5995 | (C) 347-461-7400 | KCLARKE@DEP.NYC.GOV

From: Tsiamis, Christos <Tsiamis.Christos@epa.gov>
Sent: Tuesday, October 5, 2021 1:27 PM
To: Clarke, Kevin <kclarke@dep.nyc.gov>
Cc: Hess, Juliana/NYC <Juliana.Hess@jacobs.com>; Carr, Brian <Carr.Brian@epa.gov>; Judd, Andrew/NJO <Andrew.Judd@jacobs.com>
Subject: [EXTERNAL] RE: New York City's DEIS for the Gowanus Canal area

Kevin,

The e-mail I sent you, with specific technical questions about EIS matters tied to EPA's CSO remedy at the Gowanus Canal, was sent pursuant to the Orders issued to New York City by EPA and not as comments to the EIS document that New York City had solicited from the general public.

Therefore, I would appreciate it if you provided a detailed response to each question/comment in my e-mail of July 20, 2021, even if that means copying some information directly from the City's public response document. Please, include the information that you provided today. We will then review your direct responses to the comments provided by my e-mail and follow up with any further questions or comments as they pertain to the CSO remedy work.

Please provide the requested response document within a week of this.

Thank you.

Christos

Christos Tsiamis
Senior Project Manager
New York Remediation Branch
USEPA, Region 2
New York, NY

From: Clarke, Kevin <kclarke@dep.nyc.gov>
Sent: Tuesday, October 5, 2021 1:01 PM
To: Tsiamis, Christos <Tsiamis.Christos@epa.gov>
Cc: Hess, Juliana/NYC <Juliana.Hess@jacobs.com>
Subject: RE: New York City's DEIS for the Gowanus Canal area

Christos:
There were two comments in your email below that were not included in the formal comments EPA submitted on the DEIS for the rezoning. Those comments are addressed in the attached document. Please review and let me know if you have any further comments or questions.
Thank you,
Kevin

KEVIN CLARKE, P.E. | PORTFOLIO MANAGER |
NYC ENVIRONMENTAL PROTECTION | (O) 718 595 5995 | (C) 347-461-7400 | KCLARKE@DEP.NYC.GOV

From: Tsiamis, Christos <Tsiamis.Christos@epa.gov>
Sent: Tuesday, July 20, 2021 3:59 PM
To: Clarke, Kevin <kclarke@dep.nyc.gov>
Cc: Hess, Juliana/NYC <Juliana.Hess@jacobs.com>
Subject: Re: New York City's DEIS for the Gowanus Canal area

Kevin,

As you know, the proposed Gowanus rezoning has the potential to impact the Gowanus remedy as a result of changes in sanitary and stormwater loadings and discharges. EPA and its consultants have identified a number of inconsistencies in the City's DEIS on these issues. Along with the absence of certain supporting information, this prevents EPA from accurately determining the potential impacts to the Canal and the CSO remedy.

The City is doing the design and implementation of the CSO and Canal remedy pursuant to several EPA Superfund orders. **EPA requests that DEP provide responses to the following questions within 30 days of your receipt of this request in order for EPA to assess potential impacts to the Superfund remedy.**

1) Please provide a calculation of the anticipated additional sanitary flow, together with the detailed supporting data, assumptions and calculations, so that EPA may confirm the relevant calculations. DEP's response should also address the following issues:

Inconsistent total flows are indicated:

a) Page 11-4 states that the new development will be "generating additional sanitary flow of 1.29 mgd."
b) Table 11-8 on page 11-16 states that an additional 1.98 mgd of wastewater will be generated as result of the rezoning.
c) Appendix F, Table 3-4, states that the additional sanitary flow is 1.605 mgd.

Different residential wastewater generation rates are assumed, contrary to the CEQR manual and other standards:

a) Page 11-22 states: "Additional dry weather sanitary flow was added to the model based on the projected no action residential population in the rezoning area, assuming a per capita wastewater generation of 73 gpd." The same 73 gpd wastewater generation assumption is made for the with-action scenario on page 11-23.

b) The 73 gpd is less than the 100 gpd specified in the CEQR manual, the Ten States Standards, and other design guidelines, and it is inconsistent with other statements in Chapter 11 and Appendix F. Please explain the basis for using 73 gpd in this calculation.

c) Table 3-4, which is calculated based on a different methodology - transit analysis zone (TAZ), effectively utilizes a figure of 83.0 gpd when the calculations are normalized as unit sanitary flow, for the rezoning, but higher and lower unit amounts for the baseline and without rezoning scenarios. (See yellow highlighted column, below, added to Table 3-4).

Scenario	Population in Rezoned Area	Sanitary Flow in Rezoned Area (MGD)	**Sanitary Flow (gpcd)**
Baseline	6,541	0.640	97.8
2035, Without Rezoning	8,746	0.960	109.8
2035, With Rezoning	27,035	2.245	83.0

2) It does not appear that the results shown in Chapter 11 for sanitary flows and stormwater runoff calculations were used in the modeling results shown in Appendix F. Please state which, if any, of the assumptions used in the modeling in Appendix F differ from the Chapter 11 calculations.

3) Table 11-4 on page 11-9 shows sanitary flows for 4 rainfall volumes for each of 5 "subcatchment areas" in the Red Hook WRRF service area and 1 Owls Head WRRF subcatchment area for the Existing Condition. The "Sanitary Volume to CSS (MG)" seems to change from one size event to another. The same is true in Tables 11-7 and 11-11 for the other scenarios. Please provide an explanation for how this is possible, together with the supporting data assumptions and calculations. It also seems that there are no sanitary flows from several of these catchment areas. Please provide an explanation for how this is possible, together with the supporting data assumptions and calculations.

4) The DEIS conclusions and the typical year CSO discharge volumes at specific outfalls shown in the Table 11-16 below for the "No Action Condition" are not consistent with NYC's September 10, 2018 Gowanus Canal Meeting on NYC Tunnel Alternative presentation to EPA of a typical year discharges for the "Tanks Only" scenario, also shown below. Appendix F does not appear to be consistent with the modeling and engineering work presented to EPA at past meetings. For the past several years, NYC has revised its models to represent the two tanks, green infrastructure and the HLSS projects. However, it appears that new modeling has been performed to represent these conditions, and not using the methods NYC has used previously. Please confirm if that is the case and provide a detailed explanation of the basis for any such changes.

DEIS:

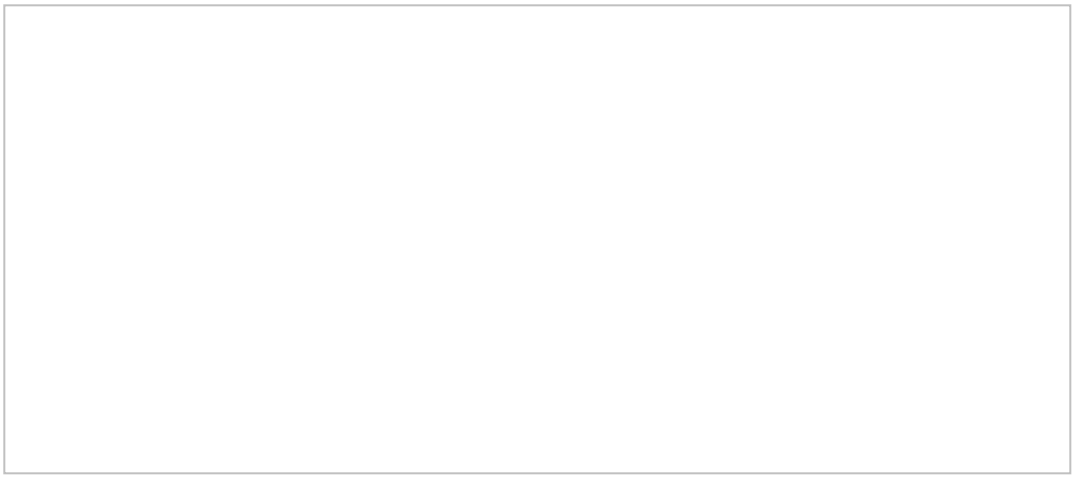
-

"The analysis found that, under the With Action condition, with the additional development facilitated by the Proposed Actions, CSO volumes would decrease as compared with the No Action

condition despite the increase to sanitary flows from new development." - Page 11-4

"The Unified Stormwater Rule benefits in the rezoning area more than offset the increase in sanitary flows and, even with the increased population and sanitary flow, would result in approximately 5 million gallons per year of CSO reduction to the Gowanus Canal." - Page 11-4

"The assessment found that the estimated pollutant loads to Gowanus Canal decreased, due to the decrease in CSO volumes as described above." - Page 11-4



September 10, 2018 Gowanus Canal Meeting on NYC Tunnel Alternative:

Summary of Typical Year (2008) Performance				
	Baseline	Option 1: Tanks Only	Option 3a: Phase 1 and OH Flooding Benefits	Option 4b: All Phases
Total Storage Volume (MG)		12	17.5	37.3
CSO Performance				
a. % CSO Captured at RH-034 and OH-007				
RH-034		75.4%	83.0%	93.4%
OH-007		84.6%	100.0%	100.0%
b. Annual Average Overflows (MG)				
RH-034	123.3	30.9	21.3	8.2
OH-007	63.2	9.7	0	0.02
RH-031	16.9	16.9	16.9	0
RH-030	16.4	16.4	16.4	0
RH-035	5.4	5.4	5.4	0
Other Overflows	19.3	17.6	17.6	4.8
c. Number of Activations				
RH-034		6	4	2
OH-007		4	0	1
Entire Canal Percent CSO Volume Reduction		49%	56%	78%

5) In addition, on the west side of the Canal, the no-action discharge volumes shown in Table 11-16 for RH-035 where substantial rezoning will occur are approximately 3 MG higher than NYC's September 2018 calculations above. Rather than reducing discharges at RH-035 by 1.1 MG as Table 11-16 implies, these calculations show a 2 MG increase in discharges. Please provide the detailed supporting basis for the calculations in Table 11-16 for RH-035.

6) Tables 11-13 through 11-17 cite the source of the information "DEP, Gowanus Canal CSO and Surcharging Assessment Technical Memorandum (January 2021)." Appendix F is titled "Gowanus Canal CSO and Flooding Assessment Technical Memorandum (January 2021)". Please confirm if this is the same document. If not, provide the additional document.

7) The CSO discharge volumes shown in Table 4-2 of Appendix F are not consistent with Chapter 11 of the EIS. Please provide a detailed explanation for the inconsistencies, or a corrected table.

8) There appears to be no consistency between how sanitary flow and stormwater runoff calculations shown in Chapter 11 and Appendix F were performed for the with and without the new Unified Stormwater Rule scenarios. Please provide the supporting data and assumptions for the modeling work shown in Appendix F, along with clarifications on the reason for the differences between Chapter 11 and Appendix F.

9) Please provide EPA with a map that identifies all the lots in the Gowanus Canal CSO drainage areas that the 2021 Unified Stormwater Rule would apply to, and provide a calculation showing how the application of the Rule to those properties would change the associated CSO outfall's discharge volume.

10) Please state the percent of the combined sewer system capacity utilized for sanitary loads during dry weather conditions under the current and anticipated scenarios, the volume of any change for in-line CSO storage capacity, the volume of any associated CSO discharge changes, and the supporting data and assumptions.

Thank you for your cooperation.

Sincerely,

Christos Tsiamis
Senior Project Manager
New York Remediation Branch
USEPA, Region 2
New York, NY

1. Please provide a calculation of the anticipated additional sanitary flow, together with the detailed supporting data, assumptions and calculations, so that EPA may confirm the relevant calculations. DEP's response should also address the following issues:

Inconsistent total flows are indicated:

a. Page 11-4 states that the new development will be "generating additional sanitary flow of 1.29 mgd."
b. Table 11-8 on page 11-16 states that an additional 1.98 mgd of wastewater will be generated as result of the rezoning.
c. Appendix F, Table 3-4, states that the additional sanitary flow is 1.605 mgd.

Following CEQR methodology, a screening level assessment was done to determine if further detailed analysis was needed. Using the 100 gpd from the CEQR Technical Manual, this yielded the 1.98 mgd in Table 11-8. The detailed analysis used more refined and area-specific numbers (detailed in the following response); this analysis yielded an increase of 1.285 mgd in Appendix F, rounded to 1.29 mgd in the Principal Conclusions discussion on page 11-4 of the DEIS. The 1.605 mgd is actually the difference between With Action flow of 2.245 mgd (2035 conditions) and Baseline (2019 conditions) flow of 0.64 mgd. However, CEQR's incremental analysis uses the difference between future Without Action and With Action conditions because neighborhoods are not static and change over time regardless of proposed actions. The effect of the rezoning, therefore, is the With Action flow of 2.245 mgd less the 2035 condition Without Action, 0.960 mgd, which is 1.285 mgd.

Different residential wastewater generation rates are assumed, contrary to the CEQR manual and other standards:

a. Page 11-22 states: "Additional dry weather sanitary flow was added to the model based on the projected no action residential population in the rezoning area, assuming a per capita wastewater generation of 73 gpd." The same 73 gpd wastewater generation assumption is made for the with-action scenario on page 11-23.
b. The 73 gpd is less than the 100 gpd specified in the CEQR manual, the Ten States Standards, and other design guidelines, and it is inconsistent with other statements in Chapter 11 and Appendix F. Please explain the basis for using 73 gpd in this calculation.
c. Table 3-4, which is calculated based on a different methodology - transit analysis zone (TAZ), effectively utilizes a figure of 83.0 gpd when the calculations are normalized as unit sanitary flow, for the rezoning, but higher and lower unit amounts for the baseline and without rezoning scenarios. (See yellow highlighted column, below, added to Table 3-4).

Scenario	Population in Rezoned Area	Sanitary Flow in Rezoned Area (MGD)	Sanitary Flow (gpcd)
Baseline	6,541	0.640	97.8
2035, Without Rezoning	8,746	0.960	109.8
2035, With Rezoning	27,035	2.245	83.0

The 100 gpd sanitary flow in the CEQR Manual is a screening number used for desktop evaluations as part of the preliminary analysis in order to determine if a detailed analysis is warranted. The 100 gpd flow rate was a conservative estimate made at the time of the 2010 CEQR Technical Manual. As described below, it was determined that 73 gpd was appropriate for the detailed modeling evaluations for the Gowanus DEIS. The 100 gpd number may have caused confusion in its placement in Chapter 11 and should not be construed as a key input into the detailed analysis.

DEP's Bureau of Environmental Planning and Analysis (BEPA) used the citywide automatic meter reading (AMR) residential water demand data for Fiscal Year 2016-Fiscal Year 2019 and determined that the citywide 4-year residential water usage average was 73 gpd. For Brooklyn, the FY19 residential water usage is estimated to be only 65 gpd. BEPA's methodology was to isolate citywide residential consumption (AMR data) and divide that consumption by the number of housing units for each residential building in the city, as provided by MapPLUTO. BEPA then divided that by the average household size, according to US Census PUMA (population unit measurement area) district numbers.

As a conservative assumption, the citywide number of 73 gpd was selected for the EIS analysis in this Brooklyn neighborhood, instead of the 65 gpd appropriate for Brooklyn. The Ten States' Standards Manual Section 11.243 Hydraulic Capacity for Wastewater Facilities to Serve New Collection Systems states that "the sizing of wastewater facilities receiving flows from new wastewater collection systems shall be based on an average daily flow of 100 gallons (380 Liters) per capita plus wastewater flow from industrial plants and major institutional and commercial facilities unless water use data or other justification upon which to better estimate flow is provided." This guidance is pertinent to the design of new collection systems, so it is not directly relevant to the sewer capacity analysis performed herein. However, it is important to note that this guidance does provide flexibility for a wastewater utility to use metered water use data to develop better estimates.

Also, note that the Ten States Standards 100 gallons per capita number includes an inflow and infiltration (I/I) component into the existing sewers, which represents the extraneous flow into sewers through cracks and leaky joints irrespective of the population contributing sanitary flows into the system. This component has been already accounted for in DEP's Gowanus models.

Therefore, the use of 100 gpd for new population being added as part of Action scenario is not warranted for detailed analysis.

The rezoning area includes the 63 projected RWCDS sites and other existing residential and industrial/ commercial buildings. The population and sanitary flow generation shown in Table 3-4 of Appendix F uses 73 gpd per person only for the 63 projected sites. The remaining lots within the rezoning area, with existing buildings, used flows from the 2035 wastewater flow projection for the two WRRF service areas, consistent with the Gowanus Canal LTCP and Superfund CSO Tank efforts. These more conservative flows were used, as it was not known if the buildings utilize low flow fixtures or other features assumed to be present in new developments. As such, the total flows from both rezoned sites and remainder of the rezoning area should not be used to develop or compare average unit sanitary flows for different scenarios (Baseline vs. No Action vs. Action), as has been done in the EPA review.

An explanation of the 100 vs 73 gpd has been incorporated into the Infrastructure chapter to make the sequence of the analyses clearer to the reader.

2. It does not appear that the results shown in Chapter 11 for sanitary flows and stormwater runoff calculations were used in the modeling results shown in Appendix F. Please state which, if any, of the assumptions used in the modeling in Appendix F differ from the Chapter 11 calculations.

The EIS contains basic screening assessment results, which were based on the CEQR Technical Manual, as well as results of a detailed analysis using a model. DEP has used InfoWorks Integrated Catchment Modeling (ICM) over the past two decades. The ICM models use underlying census data and, as documented in the Report for Citywide Recalibration of InfoWorks Models (DEP, 2012), the models to support the Long Term Control Planning (LTCP) efforts were constructed with a resolution to include sewers generally 60-inches and larger in size to characterize the hydraulic calculations at combined sewer regulators, outfalls, and the interceptor sewers. Drainage areas (subcatchments) to individual regulators delineated to drain into the modeled 60-inches and larger sewer network are coarser, encompassing dozens or hundreds of city blocks.

To focus on the rezoning area, the model used for the analysis was expanded to include sewers smaller than 60-inches and the associated finer subcatchments; as such, the time of concentration in urban subcatchments and time of travel within the sewer network get altered from the WRRF scale model. This is the fundamental reason for minor changes seen in the combined sewer overflow (CSO) characteristics between Gowanus Canal LTCP/Superfund CSO Tank efforts and the rezoning-focused modeling results presented in Appendix F of the DEIS. Similarly, the changes in boundary conditions such as sanitary flows (both in quantity and the distribution within a WRRF service area) will lead to minor differences in CSOs as the sanitary flows form the baseflow conditions in the sewers and runoff gets added to these baseflows in sewers during rainy periods. As each modeling effort uses models with different resolution or boundary conditions,

small differences are expected to be seen in the results presented under different projects. Specific differences between the LTCP/Superfund efforts and DEIS analyses are summarized as part of the response to Comment 4 below.

3. Table 11-4 on page 11-9 shows sanitary flows for 4 rainfall volumes for each of 5 "subcatchment areas" in the Red Hook WRRF service area and 1 Owls Head WRRF subcatchment area for the Existing Condition. The "Sanitary Volume to CSS (MG)" seems to change from one size event to another. The same is true in Tables 11-7 and 11-11 for the other scenarios. Please provide an explanation for how this is possible, together with the supporting data assumptions and calculations. It also seems that there are no sanitary flows from several of these catchment areas. Please provide an explanation for how this is possible, together with the supporting data assumptions and calculations.

Sanitary volumes are noted in these tables in volumetric units (MG) and not the flow rate in mgd. When the flow rates in mgd are multiplied by different durations associated with different rainfall events shown in these tables, the volumes of sanitary sewage for different rainfall events will be different accordingly. As a result, longer duration events would result in higher sanitary sewage volumes reported during these events.

The sanitary flows presented in Tables 11-7 and 11-11 were preliminary estimates developed in accordance with the Section 320 of Chapter 13 of the CEQR Manual. These were refined in the Appendix F calculations, using more robust population distribution and per-capita wastewater generation inputs.

4. The DEIS conclusions and the typical year CSO discharge volumes at specific outfalls shown in the Table 11-16 below for the "No Action Condition" are not consistent with NYC's September 10, 2018 Gowanus Canal Meeting on NYC Tunnel Alternative presentation to EPA of a typical year discharges for the "Tanks Only" scenario, also shown below. Appendix F does not appear to be consistent with the modeling and engineering work presented to EPA at past meetings. For the past several years, NYC has revised its models to represent the two tanks, green infrastructure and the HLSS projects. However, it appears that new modeling has been performed to represent these conditions, and not using the methods NYC has used previously. Please confirm if that is the case and provide a detailed explanation of the basis for any such changes.

The EIS analysis was specifically prepared to examine the potential effect of the RWCDS sites on the sewer system including changes to CSO and street flooding. There are five principal differences between the 2018 NYC Tunnel Alternative Analysis for "Tanks Only" scenario and DEIS, as described in Page 3 of Appendix F. These differences are summarized here:

i. The 2018 NYC Tunnel Alternative Analysis used coarser subcatchments from the LTCP model that often encompass dozens or hundreds of city blocks whereas the RWCDS

model has been built at a higher resolution within the rezoning area at the scale of lots. The differences in time of concentration at the subcatchment-scale and time of travel for combined sewage within the sewer system between the coarse and high-resolution models will exhibit minor differences in CSO volumes/peaks at the CSO outfalls;

ii. The results presented at the September 10, 2018 NYC Tunnel Alternative for the "Tanks Only" scenario and Gowanus Canal LTCP modeling efforts used the 2040 planning year for sanitary flow projection. This is based on the selection of Year 2040 for likely construction of all LTCP-related projects, including the CSO tanks. But the DEIS used a planning "build year" of 2035 to analyze neighborhood-wide proposed zoning changes. As such, the Year 2035 flow projections for Red Hook (RH) and Owls Head (OH) WRRFs have been used.

iii. The results presented at the September 10, 2018 NYC Tunnel Alternative for the "Tanks Only" scenario and Gowanus Canal LTCP modeling efforts used a population distribution method that has been replaced by the Transit Analysis Zone (TAZ) method in the DEIS within the Gowanus rezoning area. The LTCP/Superfund modeling used the 2010 census block data on residential population (most recent official data available when the RH and OH WRRF models were calibrated and validated) that was applied at the scale of large subcatchments encompassing dozens or hundreds of city blocks.The TAZ is a statistical entity delineated by state/city transportation agencies to tabulate traffic-related census data, especially the journey-to-work and place-of-work statistics. A TAZ can include one or more census blocks, block groups, or census tracts and can provide a more robust way of estimating population than the traditional census block methodology used in the LTCP/Superfund models. This is particularly useful for dense urban areas such as Brooklyn. More robust population projections at neighborhood scales in the TAZ method and the associated per capita flows have changed the sanitary flow allocations for each combined sewer regulator, which can redistribute the estimated CSO discharges among different outfalls. Outside of the Gowanus rezoning area, the population projections have been maintained the same as in the LTCP/superfund projects;

iv. In the latest design of RH-034 tank, the tributary sewer system to Nevins Street Pump Station has been reconfigured to drain to the tank by gravity, with raising of weirs at the four CSO outfalls on the eastern side of the Canal. This new design was not reflected in the prior 2018 "Tanks Only" scenario. It is worth emphasizing that the detailed analysis shows that, with the Gowanus Rezoning, the CSO volume reductions at RH-034 and OH-007 would be as much as was modeled in 2018 (76% and 85%, respectively), well exceeding the ROD requirement of 58-74% volume reduction at these two largest CSO outfalls within Gowanus Canal watershed; and

v. On-site stormwater controls to achieve the green infrastructure targets in the LTCP/Superfund efforts have been modeled using lumped representation of retention and detention practices. This is attributed to coarser subcatchments encompassing dozens or hundreds of city blocks and the modeling of individual green infrastructure assets was not performed in the LTCP/Superfund ICM models. On the other hand, the retention and detention stormwater controls sized based on the Unified Stormwater Rule have been modeled individually at each of the RWCDS lots. Capturing the characteristics of stormwater controls including infiltration, storage, and routing of peak flows on-site in a more robust way in RWCDS lots make minor differences in the characteristics of CSOs at end-of-pipe. Furthermore, the USWR requirements for onsite detention release rates

are more stringent than those for the 2012 rule and provide greater CSO reduction benefits.

The results shown in Appendix F, with the improvements included in the model as listed above, show that the rezoning will result in over 5 MG a year reduction in CSO discharge into the Canal.

5. In addition, on the west side of the Canal, the no-action discharge volumes shown in Table 11-16 for RH-035 where substantial rezoning will occur are approximately 3 MG higher than NYC's September 2018 calculations above. Rather than reducing discharges at RH-035 by 1.1 MG as Table 11-16 implies, these calculations show a 2 MG increase in discharges. Please provide the detailed supporting basis for the calculations in Table 11-16 for RH-035.

The TAZ methodology of distributing the population and different per capita wastewater generation on the west side of the canal for the No Action scenario are different from the inputs used in the analysis shown at the September 10, 2018 Gowanus Tunnel Alternative presentation for the “Tanks Only” scenario from the Gowanus Canal Superfund CSO Tank analysis. However, these marginal changes in flows at the west side outfalls are insignificant in comparison to the overall CSO reductions achieved at RH-034 and OH-007 to meet the ROD requirements.

6. Tables 11-13 through 11-17 cite the source of the information "DEP, Gowanus Canal CSO and Surcharging Assessment Technical Memorandum (January 2021)." Appendix F is titled "Gowanus Canal CSO and Flooding Assessment Technical Memorandum (January 2021)". Please confirm if this is the same document. If not, provide the additional document.

Yes, these are the same document.

7. The CSO discharge volumes shown in Table 4-2 of Appendix F are not consistent with Chapter 11 of the EIS. Please provide a detailed explanation for the inconsistencies, or a corrected table.

Table 4-2 in Appendix F is the exact basis for numbers reflected in Table 11-16 in Chapter 11 of DEIS. There is a difference in significant digits (two digits in Appendix F vs. one significant digit in DEIS) that led to minor differences seen for the No Action and Action scenarios in these two tables. Significant digits consistency will be maintained between the two tables in the Final EIS to show the same exact values.

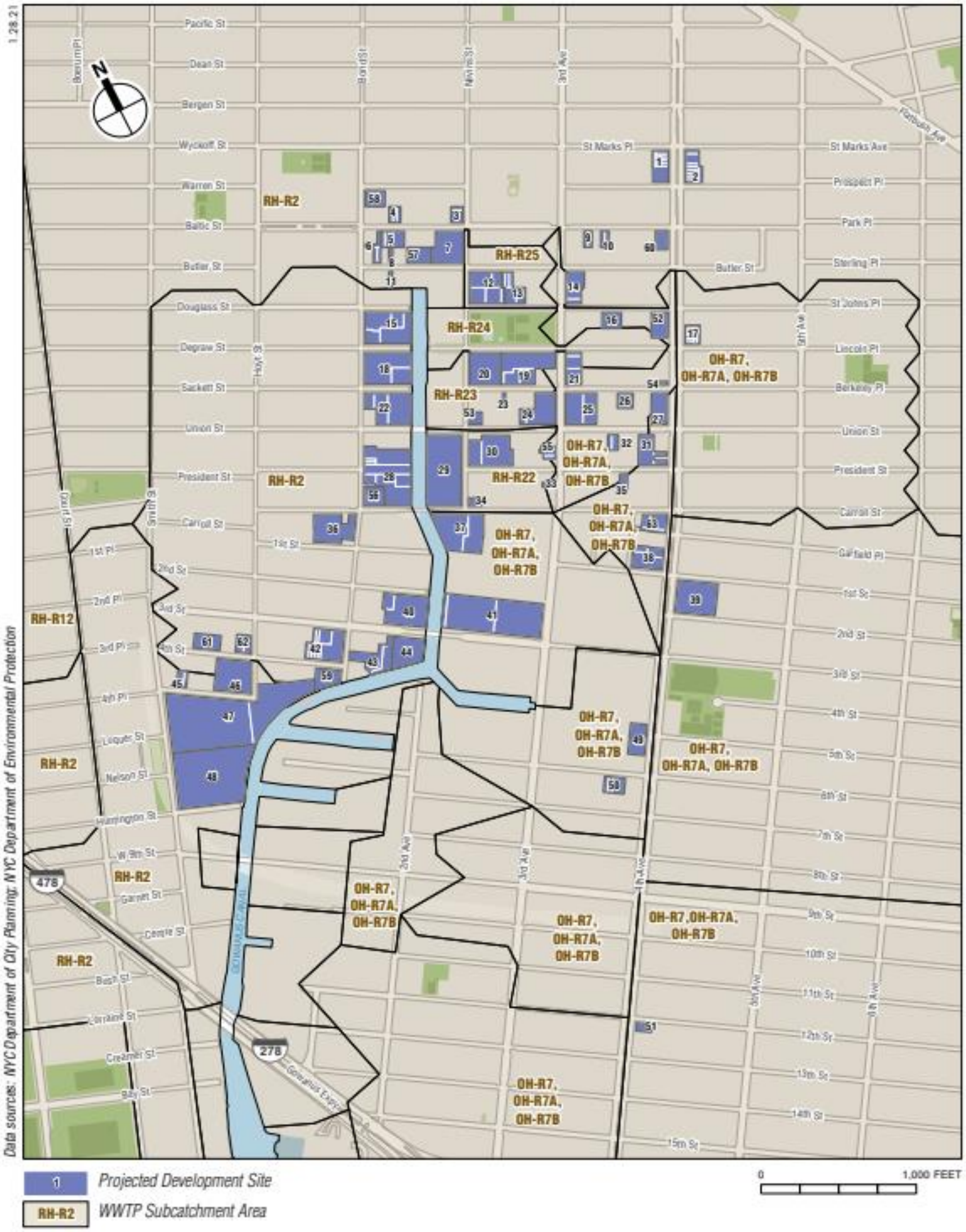
8. There appears to be no consistency between how sanitary flow and stormwater runoff calculations shown in Chapter 11 and Appendix F were performed for the with and without the new Unified Stormwater Rule scenarios. Please provide the supporting data

and assumptions for the modeling work shown in Appendix F, along with clarifications on the reason for the differences between Chapter 11 and Appendix F.

The spreadsheet stormwater calculations shown in Chapter 11 are consistent with the current CEQR manual and performed on an event-basis and were part of a preliminary initial screening analysis, whereas the Appendix F calculations were part of a detailed analysis incorporating the Unified Stormwater Rule and are consistent with the LTCP/Superfund-related sewer modeling work performed by DEP with the assumptions applicable for the DEIS analysis (e.g., 2035 dry weather flows at WRRF service area scale and TAZ methodology within the rezoning area). LTCP/superfund model's populations developed from available census block data have been updated with TAZ estimates to represent population increases at lot-scale.

9. Please provide EPA with a map that identifies all the lots in the Gowanus Canal CSO drainage areas that the 2021 Unified Stormwater Rule would apply to, and provide a calculation showing how the application of the Rule to those properties would change the associated CSO outfall's discharge volume.

The 2021 Unified Stormwater Rule (USWR) will apply to all new construction, additions/ alterations, and agency projects City-wide. For the rezoning analysis, all projected development sites as determined by the Department of City Planning were modeled as subject to the USWR. Figure 11-3 in Chapter 11 (below) of the EIS shows the projected development sites. Stormwater retention and/or detention practices required by the USWR at these sites were explicitly modeled using approaches consistent with the DEP representation of green infrastructure (GI) in the LTCP models.



WWTP Subcatchment Areas

Figure 11-3

It is impossible to provide a hand-calculation of how the application of the USWR at one specific site translates to associated CSO outfall discharge volume for two reasons: (1) reductions in combined sewage, which is the sum of reduced stormwater volume and increased sanitary sewage at a given site, are different for different storms within the typical year; and (2) reductions at site-scale get mitigated as the flow is conveyed through the collection system and the compounding reductions at multiple sites is what ultimately leads to the reduction in CSO observed at an outfall located downstream. Due to these dynamic effects, USWR benefits must be modeled. In general, previous DEP GI modeling efforts, documented in the GI Performance Metrics Report submitted to New York State Department of Environmental Conservation as part of a consent order, provide equivalency rates of about 0.3-0.4 MG of annual CSO reduction per 1 acre of impervious area managed by GI.

10. Please state the percent of the combined sewer system capacity utilized for sanitary loads during dry weather conditions under the current and anticipated scenarios, the volume of any change for in-line CSO storage capacity, the volume of any associated CSO discharge changes, and the supporting data and assumptions.

Increases in sanitary flows for both the Red Hook and Owls Head WRRF service areas due to rezoning are much smaller than the overall combined sewer system capacity and also the WRRF design dry weather flow capacity (60 MGD and 120 MGD for Red Hook and Owls Head respectively). The difference between No Action and Action scenarios is 1.285 mgd of sanitary flow, which is distributed among various combined sewer regulator drainage areas. Dry weather flow in each pipe was compared with the Manning's full-pipe capacity to determine the percentage capacity utilized for dry weather flow for No Action and Action scenarios. All pipes within the rezoning area have less than 10% of their capacity utilized under both No Action and Action scenarios.